

### REMARKS

The Office Action mailed 3 November 2010, has been received and its contents carefully noted. The pending claims, claims 1-3 and 5-9, were rejected. By this amendment, claims 1 and 3 have been amended. Support may be found in the specification and the claims as originally filed. See, for example, page 23, lines 9-11 and page 21, lines 25-26 of the specification as filed. No statutory new matter has been added. Therefore, reconsideration and entry of the claims as amended are respectfully requested.

#### Claim Objections

The Examiner objected to claim 3 for containing a typographical error.

Applicants respectfully submit that the objection to claim 3 may be withdrawn in view of the amendment thereto.

#### Rejection under 35 U.S.C. 112, second paragraph

The Examiner rejected claims 8 and 9 under 35 U.S.C. 112, second paragraph, as being indefinite.

Applicants respectfully submit that the rejection under 35 U.S.C. 112, second paragraph, may be withdrawn in view of the amendment to the claims.

#### Art rejections based on Nowak

The Examiner rejected claims 1 and 2 under 35 U.S.C. 102(b) as being anticipated by Nowak (US 20010047047). Specifically, the Examiner deemed that Nowak discloses (1) hydrophobic pyrogenic silica (2) compacted by a pressing filter belt. The Examiner pointed to the disclosures of Aerosil® R202 and Aerosil® R8200. The Examiner also rejected claims 3 and 5 under 35 U.S.C. 103(a) as being obvious over Nowak.

Applicants respectfully submit that Nowak does not teach or suggest pyrogenic silica that is (1) hydrophobic, and (2) compacted by a pressing filter belt. Specifically, the only hydrophobic silicas Nowak discloses are Aerosil® R972, R974, R202, R805, R812, R812S, R104, R106, and R8200, at paragraphs [0018] and [0019]. All the other silicas disclosed in Nowak are hydrophilic. Not one of the hydrophobic silicas of Nowak has been compacted by a

pressing filter belt. As is well known in the silica industry, Aerosil® silica obtained from Degussa (now Evonik) which has a “V” or “VV” designation is one that has been compacted by a roller compactor or a pressing filter belt, respectively.

Therefore, Nowak does not teach or suggest a composition comprising pyrogenic silica that is (1) hydrophobic, and (2) compacted by a pressing filter belt or any composition containing such as required by the instant claims. Consequently, the rejections under 35 U.S.C. 102(b) and 103(a) must be properly withdrawn.

#### **Art rejection based on Deller**

The Examiner rejected claims 1-3 and 5-9 as being anticipated by Deller (WO 2003/097713).

Applicants respectfully submit that Deller does not teach or suggest hydrophobic pyrogenic silica that has been (1) made hydrophobic with a silicon oil, with an octyl silane, with hexadimethyl disilazane, with a methacrylate silane, or with an octamethyl cyclotetrasiloxane, and (2) compacted by a pressing filter belt as set forth in the instant claims. The only hydrophobic silicas that Deller discloses as being compacted by a pressing filter belt is Aerosil® 202 VV 60 and VV 90 and Aerosil® 270 VV 60 and VV 90. Both Aerosil® 202 and Aerosil® 270 are after treated with polydimethylsiloxane (PDMS). As it is well known in the chemical arts that surface modification with different chemicals, i.e. functional groups, results in different compositions and different properties.

Therefore, Deller does not teach or suggest a composition comprising pyrogenic silica that has been (1) made hydrophobic with a silicone oil, with an octyl silane, with hexadimethyl disilazane, with a methacrylate silane, or with an octamethyl cyclotetrasiloxane, and (2) compacted by a pressing filter belt as set forth in the instant claims. Thus, the rejection under 35 U.S.C. 102(b) must properly be withdrawn.

#### **Art rejection based on Gruenewaelder and Hasenzahl**

The Examiner rejected claims 1-3 and 5-9 as being obvious over Gruenewaelder (WO 2001/090271) in view of Hasenzahl (US 20020197311).

Applicants respectfully submit that for a reason similar to the one causing the Examiner

to withdraw the art rejection based on Meyer in view of Klinge (See bottom of page 13 of the Office Action), it would not have been obvious to combine the disclosures of Gruenewaelder and Hasenzahl. Specifically, the invention of Gruenewaelder employs a hydrophobic highly disperse (not compacted) silica, i.e. Aerosil® R202. However, the exemplified silica of Hasenzahl is Aerosil® R 200 VV which is hydrophilic. In addition, nowhere do Gruenewaelder and Hasenzahl teach or suggest making the silica hydrophobic by treating with a silicone oil, with an octyl silane, with hexadimethyl disilazane, with a methacrylate silane, or with an octamethyl cyclotetrasiloxane and compacting with a pressing filter belt as set forth in the instant claims.

Therefore, Applicants respectfully submit that Gruenewaelder and Hasenzahl do not teach or suggest the present invention as claimed in the rejection under 35 U.S.C. 103(a) should properly be withdrawn.

For the Examiner's convenience information on Aerosil® products available from Evonik Industries (formerly Degussa AG) may be obtained at:  
<http://www.aerosil.com/lpa-productfinder/page/productsbytext/faces/textsearch.jsp?lang=en>

In addition, Applicants submit the following experimental data and results which show the differences between (1) hydrophobic ball milled silica, i.e. R8200, (2) hydrophilic silica compacted with a pressing filter belt, i.e. R200 VV 120, and (3) hydrophobic silica compacted with a pressing filter belt, i.e. R202 VV 90. **Applicants submit herewith a formal interview request in order to discuss these results with the Examiner and determine whether a declaration providing such would help to advance prosecution.**

#### Test Procedures:

All five different AEROSIL-grades have been incorporated and dispersed at a loading level of 8 wt. % in Voranol 2000 L using a Getzmann Dispermat Dissolver with a cowles blade of 4 cm diameter.

Voranol 2000 L is a polyol-component from Dow-Chemical which is used for the production of polyurethane adhesives and sealants.

The wet-in-behaviour has been measured as follows: 8 wt.-% of the AEROSIL grades have been weighed in a polyethylene 350 ml-cup, so that the fumed silica is at the top of the surface of the Voranol 2000 L.

Then the cowles-blade of the Getzmann Dispermat will be decreased until the middle of the cup, which actually is 11 mm of the Getzmann Dispermat adjustment. Then the dissolver is switched on with 200 rpm and the time is measured until the fumed silica has fully wetted with the Voranol 2000 L and is completely disappeared from the surface of the Voranol 200 L. This time should be very small.

The viscosities of the samples have been measured with an Anton Paar Rheometer MCR 301 with a plate-cone after 90 min. storage at norm climate at 23 °C and 100 /s (measuring system CP25-2-SN 11805; d=0,051 mm).

The Thixotropic-Indices of the samples have been calculated as the quotient of the viscosities of 5/s and 50/s.

#### Evaluation:

The structure modified, hydrophobic fumed silica AEROSIL R 8200, densified with a ball mill to a tapped density of ca. 160 g/l, shows a very long wet-in behaviour with 18.4 minutes in the Voranol 2000 L. Furthermore, AEROSIL R 8200 shows a very low thickening effect in Voranol 2000 L of 0.634 Pa s and also a very low thixotropic -Index of 1.26. As a result, the Voranol 2000 L shows no thixotropic behaviour and shows a very low viscosity. Generally, systems with a Thixotropic-Index of approx. 1 show no thixotropic behaviour, whereas systems having a Thixotropic-Index of 2 or higher show a thixotropic-behaviour.

The hydrophobic fumed silica AEROSIL R 202 VV 90, densified with the pressing filter belt, shows a very quick wet-in-behaviour with 55 seconds in Voranol 2000 L, whereas the wet-in-behaviour of the hydrophobic fumed silica AEROSIL R 202, densified with a Carter-Filler to a tapped density of ca. 50 g/l, shows a significant longer wet-in time of 230 seconds in Voranol 2000 L compared to AEROSIL R 202 VV 90. Advantageously, the Thixotropic-Indices of the Voranol 2000L thixed with AEROSIL R 202 and AEROSIL R 202 VV 90 are very high and with 4.86 and 4.94 almost identical. Thus, the adhesives & sealant formulations can be produced with the same thixotropic behaviour using AEROSIL R 202 VV 90 compared to AEROSIL R

202 and with the significant advantage of a the shorter incorporation time. This advantage of the shorter production time saves especially money and energy and produces less carbon dioxide.

The hydrophilic fumed silica AEROSIL 200, densified with the Carter-Filler to a tapped density of ca. 50 g/l, shows a wet-in behaviour of 240 seconds in Voranol 2000 L, whereas the wet-in behaviour of the AEROSIL 200 VV 120 in Voranol 2000 L is 120 seconds. However, both the Thixotropic-Index of 1.65 and the viscosity of 2.07 Pa s of the system thixed with AEROSIL 200 VV 120 is significant lower compared to Voranol 2000 L thixed with AEROSIL 200 (Thixotropic-Index: 2.09 and viscosity: 5.47 Pa s). As a result, the advantage of the shorter wet-in time of AEROSIL 200 VV 120 would be compensated by the disadvantage of the significant lower rheological properties. Therefore, an adhesive & sealant producer would have to use approx. 40 % to 50 % more AEROSIL 200 VV 120 to achieve very similar rheological properties compared to AEROSIL 200. However, this would increase significantly the costs of the adhesives & sealants formulations and makes economically no sense because the fumed silica is one of the most expensive additives in adhesive & sealants formulations.

	Wet-In behaviour (seconds)	Thixotropic-Index	Viscosity in Pa s ( 23 °C at 100/s)
AEROSIL R 8200	1105	1.26	0.634
AEROSIL R 202	230	4.86	4.18
AEROSIL R 202 VV 90	55	4.94	3.41
AEROSIL 200	240	2.09	5.47
AEROSIL 200 VV 120	120	1.65	2.07

These results evidence the unexpected advantages of using a pyrogenically prepared (1) hydrophobic silica (2) that has been compacted by a pressing belt filter, over structurally modified hydrophobic silica and hydrophilic silica. Nowhere do the cited documents teach or suggest the claimed invention or its unexpected properties, i.e. wet-in behavior, thixotropic indices and viscosities. Therefore, the claimed invention is novel and unobvious.

### **Request for Interview**

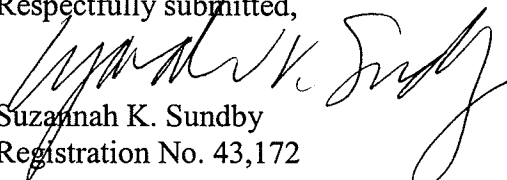
Either a telephonic or an in-person interview is respectfully requested should there be any remaining issues.

### **CONCLUSION**

All of the stated grounds of objection and rejection have been properly traversed, accommodated, or rendered moot. Therefore, it is respectfully requested that the Examiner reconsider all presently outstanding objections and rejections and that they be withdrawn. It is believed that a full and complete response has been made to the outstanding Official action and, as such, the present application is in condition for allowance. If the Examiner believes, for any reason, that personal communication will expedite prosecution of this application, the Examiner is invited to telephone the undersigned at the number provided.

It is not believed that extensions of time are required, beyond those that may otherwise be provided for in accompanying documents. However, in the event that additional extensions of time are necessary to prevent abandonment of this application, then such extensions of time are hereby petitioned under 37 C.F.R. 1.136(a), and any fees required therefor are hereby authorized to be charged to **Deposit Account No. 024300, Attorney Docket No. 032301.457.**

Respectfully submitted,

  
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